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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/338,520	06/23/1999	SUNGHO JIN	2925-0329P	1494

30595 7590 02/12/2003

HARNESS, DICKEY & PIERCE, P.L.C.  
P.O. BOX 8910  
RESTON, VA 20195

EXAMINER

PATEL, ASHOK

ART UNIT PAPER NUMBER

2879

DATE MAILED: 02/12/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/338,520

Applicant(s)

JIN ET AL.

Examiner

Ashok Patel

Art Unit

2879

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 22 November 2002.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-3,6,9-15 and 17-36 is/are pending in the application.
- 4a) Of the above claim(s) 23-35 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3,6,9-12,14-22 and 36 is/are rejected.
- 7) ☒ Claim(s) 13 and 17-22 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

### Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                             | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____  |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)         | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____                                    |

Art Unit: 2879

1. Applicant's arguments with respect to claims 1-3, 6, 9-15, 17-22 and 36 have been considered but are moot in view of the new ground(s) of rejection.

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) do not apply to the examination of this application as the application being examined was not (1) filed on or after November 29, 2000, or (2) voluntarily published under 35 U.S.C. 122(b). Therefore, this application is examined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

3. Claims 1-3, 6, <sup>9-12, 14, 15</sup>~~9-15~~, 17-22 and 36 are rejected under 35 U.S.C. 102(e) as being anticipated by Saito et al (U.S.P. 6,124,666, of record).

Saito et al disclose applicant's claimed thermionic cathode having a substrate (1), an emissive layer (5) and a buffer layer (4). The Examiner does not give a patentable weight to the claimed functional limitation of "said buffer layer inhibiting....." since it is narrative in form. In absence of

Art Unit: 2879

positive structural limitation of the buffer layer, the claimed functional limitation can not be realized. The Examiner proposes applicant to amend limitation/scope of the buffer layer in order for realization of the claimed functional limitation.

Regarding claims 2, 3 and 36, Saito teaches the buffer layer altering the substrate by randomizing and miniaturizing the grain structure of the substrate (col. 6, lines 29-38).

Regarding claim 6, Saito teaches the buffer layer material dissolving further into the substrate to form an alloy with the substrate material (col. 6, lines 19-22).

Regarding claim 10, Saito further teaches the buffer layer material as a solid solution (col. 6, lines 11-14).

Regarding claim 11 and 12, Saito teaches the buffer layer including W, Mo and Ta (col. 3, lines 18-20).

Regarding claim 17, Saito teaches the buffer layer as an alloy (col. 6, lines 29-32).

Regarding claim 18, Saito teaches the buffer layer as an alloy of Ni and W having different crystalline structure (col. 6, line 19).

Regarding claim 19, Saito teaches the buffer as a grain growth (col. 6, lines 29-32).

Art Unit: 2879

4. Claims 1 and 20 are rejected under 35 U.S.C. 102(e) as being anticipated by Buxbaum (of record).

Regarding claim 1, Buxbaum discloses a thermionic cathode having a substrate (1), a buffer layer (3), and an emissive layer (2). The Examiner again does not give a patentable weight to the claimed functional limitation for reasons set forth earlier in this office action.

Regarding claim 20, Buxbaum teaches the buffer layer having at least one of Re, Hf, Os Ru along with alloys of these elements (col. 2, lines 50-53).

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Art Unit: 2879

6. Claims 14 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Saito et al (as applied to claim 1).

Saito does not teach the cathode used in a projection electron lithography system, or in the SCALPEL system. The applicant states that W Devolre teaches the a SCALPEL electron lithography process requires a cathode with extremely small work function variation (page 3, lines 15-19).

Saito teaches that the buffer according to claim 1, helps to miniaturize the grain structure on the substrate (col. 6, lines 29-32), which inherently makes the work function more uniform across the cathode.

It would have been obvious to one of ordinary skill in the art to use Saito's cathode in a SCALPEL electron lithography system, since the system requires a cathode with a uniform work function and the buffer layer of Saito improves the uniformity of the cathode work function by miniaturizing the grain structure at the substrate.

7. Claims 13 and 17-22 are objected and are allowed over prior art for reasons as mentioned in the last office action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ashok

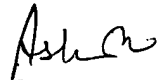
Application/Control Number: 09/338,520

Page 6

Art Unit: 2879

Patel whose telephone number is 703-305-4934. The examiner can normally be reached on Monday-Thursday.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-4900.



**Ashok Patel**  
**Primary Examiner**  
**Art Unit 2879**